

## CLAIMS

What is claimed is:

- 5 1. A method for controlling a directional angle of a steerable antenna array,  
wherein a radio signal received via the array contains a preamble portion and a data  
portion, the method comprising the steps of:  
configuring the antenna array for receiving the radio signal in an omni-  
directional mode;  
10 receiving an initial part of the preamble;  
determining a quality metric of the initial part of the preamble;  
setting the array to a candidate angle;  
receiving a subsequent part of the preamble;  
determining a quality metric for the subsequent part so received;  
15 repeating the steps of setting the array, receiving a subsequent preamble  
part and determining a quality metric for at least one additional candidate angle;  
and  
selecting a candidate angle based on the quality metrics, prior to  
reception of the data portion.  
20
2. A method as in Claim 1 additionally comprising:  
after the step of configuring the array for receiving in an omni-  
directional mode, but before receiving an initial part of the preamble, setting an  
automatic gain control.  
25
3. A method as in Claim 1 additionally comprising:  
receiving additional preamble signal parts with the array set to the  
candidate angle.

4. A method as in Claim 3 additionally comprising:  
using a subsequent preamble part for frequency estimation.
5. A method as in Claim 1 wherein the radio signal contains a Packet Protocol Data  
5 Unit (PPDU) frame that provides the preamble portion.
6. A method as in Claim 1 wherein the radio signal contains a Physical Layer  
Convergent Procedure (PLCP) comprising multiple short sync pulses, the short sync  
pulses comprising the preamble parts.
- 10 7. A method as in Claim 1 wherein the step of determining a quality metric  
additionally comprises:  
correlating a subsequent preamble part against an expected received  
preamble part.
- 15 8. A method as in Claim 7 wherein the expected received preamble part is a stored  
optimum response.
9. A method as in Claim 7 wherein the expected received preamble part is recorded  
20 from a previous radio signal reception.
10. A method as in Claim 1 wherein the preamble portion comprises short  
synchronization pulses and long synchronization pulses, and where all steps of setting  
the array to a candidate angle are completed prior to reception of the long  
25 synchronization pulses.

11. A method as in Claim 1 wherein the preamble comprise a series of synchronization pulses, each pulse having a first section and a second section, the first and second pulse section having symmetry about an in-phase and quadrature time axis.

5 12. A method as in Claim 11 wherein the step of determining a quality metric determines a quality metric for two candidate angles from a single preamble part, by determining a metric for a first candidate angle from first pulse section and determining a second candidate angle from the second pulse section.

10 13. A method as in Claim 6 wherein the quality metric is determined by the steps of:

performing a Fast Fourier Transform (FFT) on a received short sync pulse and selecting FFT bins corresponding to a desired signal;

15 performing a first inverse FFT to create a time domain result of the desired signal;

selecting bins not selected in the first step of performing an FFT as bins-not-selected to provide a noise estimate;

performing a second inverse FFT on the bins-not-selected to create a time domain result of noise signals;

20 establishing a pseudo signal-to-noise ratio estimate as the metric, from a ratio of the two inverse FFT results.